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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,107	10/31/2003	Walter Baechtiger	BAE1.001	5452

67911 7590 10/08/2008

HPF
P.O. BOX 4442
CHESTERFIELD, MO 63006-4442

EXAMINER	
STERRETT, JONATHAN G	

ART UNIT	PAPER NUMBER
3623	

MAIL DATE	DELIVERY MODE
10/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/699,107	BAECHTIGER, WALTER
	Examiner	**Art Unit**
	JONATHAN G. STERRETT	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 13 June 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 and 3-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1, 3-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Non-Final Office Action is responsive to 13 June 2008. Currently **Claims 1 and 3-24** are pending. The 35 USC 112 rejections are withdrawn.

Response to Arguments

2. The arguments have been fully considered but are not persuasive.

The examiner acknowledges the affidavit filed by the inventor, Mr. Walter Baechtiger. In this affidavit, the inventor argues that the genetic algorithm of the instant application is fundamentally different than that of the algorithm teachings of Shmoys.

The examiner respectfully disagrees.

The examiner's position is that the use of the term "genetic" in conjunction with algorithm is nonfunctional descriptive material. There is nothing in the claims that positively recites that the algorithm used, is in fact a "genetic" algorithm such that it distinguishes over the algorithm approaches taught by Shmoys. The issue here is the breadth of the claims. Naming an algorithm or function "genetic" without positively reciting in the claims how such an algorithm distinguishes over the prior art fails to provide a patentable distinction. For example, if a claim recites that a function is "parametric" without reciting how or what those variables are that make it parametric, fails to patentably distinguish over a simple equation of X and Y (i.e. parameters), even if the applicant describes an X and Y function of parameter "t" in the specification.

The applicant argues on page 10 that the cited reference fails to teach “a measure of service receiver value".

The examiner respectfully disagrees.

From a broadest reasonable interpretation of “a measure of service receiver value”, the cost associated with distributing products to locations where customers can shop, pick up goods, i.e. satisfying demand according to the teachings of Shmoys, is "a measure of service receiver value". The applicant's arguments regarding the definitions in the specification regarding what "a measure of service receiver value” are exemplary and do not further limit the claim.

The applicant argues with respect to Claim 1 on page 10 that the distance cited in Shmoys is patentably distinct and different from the "travel time" in the now amended claim limitation.

The examiner respectfully disagrees.

There are a number of issues here. The first is that Shmoy’s teaching of distance between facility location and where demand is – i.e. locating facilities for the purpose of filling demand. This concept at least implies that travel time is a consideration, since a greater distance does suggest that a customer would have a greater distance and thus longer travel time to reach a location. One of ordinary skill in the art would recognize that distance and travel time are linked. For example, traveling 100 miles to reach a store is, under normal circumstances, going to take longer than than traveling, say, 10 miles to reach a store. The second is the broadness of the

claims that only state "determining which of said service provider branch location is the **closest** service provider branch location by travel time". The examiner notes that the term “closest…by travel time” suggests distance. The claims do not rule out that distance is not to be a consideration, because of their breadth.

Additionally, although the specification hints at secondary factors that might inhibit travel time, such as traffic flows (see page 11), there is nothing in the specification that enables the application for taking into account all the different known factors that might effect traffic such that it would be enabled. The examiner notes that on pages 2 and 3, the specification discusses software that uses travel time (e.g. Mapinfo) rather than distance to determine how far locations are apart (i.e. according to travel time rather than distance). Since the limitation of travel time is known in the art as provided by mapping software evidenced in the background of the specification, in combination with the teachings of Shmoys which relies upon distance; the substitution of travel time in the genetic algorithm of Shmoys would achieve a predictable result by locating facilities which are closest to customer demand according to travel time rather than distance. Shmoys teaches the need to locate facilities that are close to customer demand because of the benefits known to those of ordinary skill in the art regarding having those location close to customer demand (e.g. cost).

The applicant argues on page 12 that Shmoys fails to teach the use of probabilistically determining whether a person will use a particular branch location.

The examiner respectfully disagrees.

The applicant's arguments are narrower than what the claims recite. Throughout the specification, examples and discussion are given of multiplying a probabilitiy of usage for a given location based on the travel time by the total number of persons who would be within reach of that particular facility. However, the claims are much broader than this. The claims recite in (e) essentially determining which location is closest by travel time and in (f) determining a probability that a person will use the closest location. Thus, in the claims, there is nothing tying these two limitations together. It is not even clear that the claims provide a useful result – the claims end with the recitation of (f) As discussed above, Shmoys suggests the use of probabilistic analysis of problems involving facility location and Shmoys teaches using distance to determine facility location. Thus the claims recite only a combination of limitations that are known in the art. The applicant has presented no evidence that probabilistic analysis in combination with travel times provides an unexpected or unanticipated result. It is the examiner's position that the use of probabilistic methods, as evidenced on page 2 of Shmoys, is well known in the art and would be well within the grasp of a person of ordinary skill in the art.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 3-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 9, 12 are rejected under 35 U.S.C. 101 based on Supreme Court precedent, and recent Federal Circuit decisions, the Office's guidance to examiners is that a § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. Diamond v. Diehr, 450 U.S. 175, 184 (1981); Parker v. Flook, 437 U.S. 584, 588 n.9 (1978); Gottschalk v. Benson, 409 U.S. 63, 70 (1972); Cochrane v. Deener, 94 U.S. 780,787-88 (1876).

An example of a method claim that would not qualify as a statutory process would be a claim that recited purely mental steps. Thus, to qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

Here, applicant's method steps, fail the first prong of the new Federal Circuit decision since they are not tied to another statutory class and can be performed without the use of a particular apparatus. Thus, **Claims 1, 9, 12** are non-statutory since it may

be performed within the human mind. The dependent claims are non-statutory at least for the reasons given above for **Claims 1, 9 and 12**.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 USC. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1 and 3-24** are rejected under 35 USC. 103(a) as being unpatentable over **Shmoys**, et. Al, “Approximation algorithms for facility location problems”, 1997, Proceedings of the twenty-ninth annual ACM symposium on Theory of computing, El Paso, Texas, United States,Pages: 265 – 274(1-21) (hereinafter **Shmoys**)

(This article was retrieved from http://www.cs.uu.nl/research/techreps/repo/CS-1997/1997-39.pdf)

The above reference denotes various algorithms for use in solving facility location problems. Shmoys provided various algorithms for helping to minimize the cost associated with location of facilities to serve or provide goods to users. Although the specific steps of processing data regarding users and service locations is different in the various algorithms of Shmoys, the algorithms themselves are comprised of a series of steps that provided a predictable result and would have been obvious to try by one of ordinary skill in the art. These steps are designed to provide an algorithm, i.e. a series

of steps, in order to efficiently assign users to locations without solving the complex underlying mathematical equations.

While its not clear and readily apparent that all the functionality were provided as a single particular algorithm, this reference clearly show that Shmoys, as a whole, taught the various limitations claimed. Therefore the Examiner submits that it would have been obvious to one of ordinary skill in the art of algorithms and mathematics to offer any permutation of these algorithms to help optimize the assigning of facilities to locations, thereby minimizing operational costs and improving operations performance. Therefore it would have been obvious to combine the following limitations separately as taught by the different algorithms of Shmoys as laid out below, because they would have been obvious to try and would have provided a predictable result to one of ordinary skill in the art.

Regarding **Claim 1**, Shmoys teaches:

A method for placing branch locations comprising the steps of

(a) identifying at least one service provider branch location;

Page 1 para 1, facility locations identified as part of problem definition

(b) identifying at least one service receiver;

Page 1 para 1, the service receivers served by the locations are each client j

(c) identifying a measure of service receiver value;

Page 2 para 1, the measure of service receiver value being optimized is lowest cost (i.e travel distance).

(d) calculating the value of each of said service receivers based on said measure of service receiver value;

Page 2 para 1, the algorithm optimizes the value (by minimizing cost) of the service receivers based on the distance for all the service receivers.

(e) determining which of said service provider branch locations is the closest service provider branch location by travel time for each of said service receivers;

page 2 para 4, the algorithmic approach minimizes cost of travel ,i.e. finds the nearest location for each of the clients (i.e. the service receivers).

Shmoy further teaches an algorithm that that is a min-sum approach (see page 2 bottom para), i.e. the algorithm converges to a minimum sum (i.e. the stop criterion).

Shmoys teaches approaches that are primarily deterministic in his various lemmas, however Shmoys does not teach using a probabilistic approach explicitly as per:

(f) determining a probability that each of said service receivers will utilize said closest service provider branch location.

However Shmoy notes on page 2 para 2 that the analysis of assignment of service receivers to locations can be made using probabilistic analysis – this suggests determining a probability that a receiver will use the closest branch location.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Shmoys to include applying a probabilistic analysis, because Shmoys teaches that using such an approach is well known in the art and this would have thus provided a predictable result in optimizing the location of service provider facilities.

The examiner's position is that the breadth of the claims makes travel time and distance equivalent, however even if they are not exactly equivalent, the specification of the instant application discloses the use of known in the art mapping software to translate distance according to the road network into travel time (e.g. MapInfo). The combination of such software translating distance into travel time would provide a predictable result to one of ordinary skill in the art in combination with the teachings of Shmoys by locating facilities which are closest to customer demand according to travel time rather than distance. Shmoys teaches the need to locate facilities that are close to customer demand because of the benefits known to those of ordinary skill in the art regarding having those location close to customer demand (e.g. cost).

Regarding **Claim 3**, Shmoys teaches:

The method of claim 1 wherein said step of identifying a closest service provider branch location from said service provider branch locations for each of

said service receivers includes the steps of: determining a travel time between each of said service receivers and one or more of said service provider branch locations; and

Page 2 last para, the algorithm determines distance (i.e. travel time) between a location and a service receiver.

for each of said service receivers, defining the service provider branch location with the shortest travel time as the closest service provider branch location for said service receiver.

Page 2 last para, the algorithm seeks to minimize the maximum distance a person has to travel (i.e. shortest travel time).

Regarding **Claim 4**, Shmoys teaches:

The method of claim 3 including the further step of determining a value for each of said service provider branch locations.

Page 2 last para, since the approach is a cost minimization problem, it determines a value for each of the branch locations as a step towards finding the total minimum cost for all the locations.

Regarding **Claim 5**, Shmoys teaches:

The method of claim 4 wherein said step of determining a value for each of said service provider branch locations includes said step of summing for each service receiver for which said service provider branch location is said closest

service provider branch location the products of (i) said value of said closest service receiver and (ii) said probability that said closest service receiver will utilize said service provider branch location.

Page 2 last para-Page 3 first para, a cost minimization algorithm sums for all the facilities the probabilities that the aggregate demand from the clients (i.e. the service receivers) will be serviced at various locations (i.e. splitting demand among locations is assigning a probability that a portion of that demand is serviced by that location).

Regarding **Claim 6**, Shmoys teaches:

The method of claim 5 including the further step of determining the value of the service provider branch network.

Page 2 last para, since an aggregate demand is being serviced, then this requires determining the total value of demand that is serviced by the network locations.

Regarding **Claim 7**, Shmoys teaches:

The method of claim 6 wherein said step of determining the value of the service provider branch network includes the step of determining network reach.

Page 3 under section 2, the definition of 'n' network facilities defines network reach.

Regarding **Claim 8**, Shmoys teaches:

The method of claim 6 wherein said step of determining the value of the service provider branch network includes the step of determining total network travel time.

Page 2 last para, since the problem is a minimization problem – it determines the total value of the system in order to minimize the total cost (i.e. travel time).

Claims 9-13, 15 recite similar limitations addressed by the rejection of **Claims 1-8** above, and are therefore rejected under the same rationale.

Regarding **Claim 14**, Shmoys teaches:

The method of claim 13 wherein said step of applying a genetic algorithm to create a population of solutions includes the steps of:

(a) discarding a number of solutions determined to be least valuable;

(b) creating new, cross-over solutions from said solutions which have not been discarded; and

(c) mutating a number of service provider locations within said new, cross-over solutions.

Page 4 para 1, the development of a fractional solution is a repeated step in the algorithm (in previous steps less than optimal solutions are discarded) which is a new cross-over solution based on the previous solutions. The x sub i-j (where 'i' is the service location) is mutated (i.e. changed from location) to identify an optimal solution.

Regarding **Claim 16**, Shmoys teaches:

The method of claim 15 wherein said fitness parameter is maximized.

Page 2 last para – Shmoys advocates using a min-max approach (i.e. a fitness parameter to the algorithm is maximized).

Regarding **Claim 17**, Shmoys teaches:

The method of claim 15 wherein said fitness parameter is minimized.

Page 2 last para – Shmoys advocates using a min-max approach (i.e. another fitness parameter to the algorithm is minimized).

Regarding **Claim 18**, Shmoys teaches an iterized algorithm for optimization. Shmoy does not teach a stop criterion that is a number of iterations.

However Official Notice is taken that it is old and well known in the art to stop an algorithm after a number of iterations. This is known to be done to prevent divergence of the results of the algorithm or to keep the algorithm from going into an 'infinite loop' situation when the algorithm is programmed in a computer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Shmoys regarding stopping the algorithm after a number of iterations because it would provide a predictable result through providing an output from the algorithm after a number of iterations. It is recognized in the art that the

iterations used to define an algorithm's output are not infinite in number (i.e. on page 5 under Proof, the reference to the algorithm ‘iteratively converts this solution into a 3g-close integer solution implies there is a finite number of iterations).

Regarding **Claim 19**, Shmoys teaches:

The method of claim 15 wherein said stop criterion is a number of iterations of said genetic algorithm wherein said fitness parameter fails to be further optimized.

Page 2 para 3, Shmoys references an algorithm optimization as being ‘asymptotically tight’ – this suggests a solution approaching an asymptote such that further iterations fail to result in further increases in optimization of the parameter sought to be optimized.

Regarding **Claim 20**, Shmoys teaches the limitations in claim 1 above. Shmoys further teaches the use of a probability threshold (page 2 para 1 under section 2, the ‘threshold' is assigning costs – note that x sub ij is less than or equal to y sub 'i', defining a threshold of assignment of service receivers to locations.

Claims 21-24 recite similar limitations addressed by the rejection of **Claims 16-19** above, and are therefore rejected under the same rationale.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached on 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beth Boswell can be reached on 571-272-6737. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JGS 10-6-2008
/Jonathan G. Sterrett/
Primary Examiner, Art Unit 3623